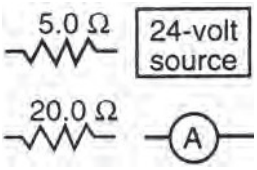
PART C QUESTIONS

Base your answers to questions 27 through 29 on the information below.

A circuit is made with a 5.0–ohm resistor and a 24-volt source of potential difference. A single ammeter is placed in the circuit to read the total current.



27 Draw a diagram of this circuit, using the symbols with labels given at the right. [Assume availability of any number of wires of negligible resistance.] [2]

28 Determine the total circuit current. [Show all calculations, including the equation and substitution with units.] [2]

29 Determine the total circuit power. [Show all calculations, including the equation and substitution with units.] [2]

Base your answers to questions 30 through 31 on the information below.

A scientist set up an experiment to collect data about lightning. In one lightning flash, a charge of 25 coulombs was transferred from the base of a cloud to the ground. The scientist measured a potential difference of 1.8×10^6 volts between the cloud and the ground and an average current of 2.0×10^4 amperes.

30 Determine the time interval over which this flash occurred. [Show all calculations, including the equation and substitution with units.] [2]

31 Determine the amount of energy, in joules, involved in the transfer of the electrons from the cloud to the ground. [Show all calculations, including the equation and substitution with units.] [2]